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The **MMWEC** **FACT BOOK**

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This brief introduction to the Massachusetts Municipal Wholesale Electric Company, more commonly known as MMWEC (pronounced em-wek), is designed to help you understand who we are, what we do and why we do it. Also included are definitions of some of the more commonly used terms in the sometimes bewildering jargon* of the utility business.

What we are...

MMWEC is a public electric power supply system. One of its functions is to meet the power (*energy*) requirements of the 32 Massachusetts municipal electric light departments which presently comprise its membership. It performs this function by buying bulk power, building power plants and acquiring shares in other utilities' generating stations for the benefit of the 32 systems.

MMWEC was established in 1969 to act as a coordinating and planning agency for a group of Massachusetts municipal electric systems which wanted to obtain supplies of bulk power more economically.

In 1973, MMWEC was authorized by these municipal electric systems to develop a long-range power supply program by initially conducting studies and by entering into negotiations for bulk power supplies on their behalf.

Also in 1973, the Massachusetts Legislature enacted Chapter 164A which enabled municipal light departments to purchase shares in designated generating plants to be built by either the municipals or by investor-owned utilities, and be financed through the sale of electric *revenue bonds*. Under this law, MMWEC provided municipalities with power supply planning and coordination and financial consulting in connection with the purchase of facilities and the issuance of revenue bonds to pay for the facilities.

Chapter 775 of the Acts of 1975, passed by the Legislature in December 1975 and accepted by the MMWEC membership on May 27, 1976, made MMWEC a public corporation and authorized it to issue its own electric revenue bonds secured by *Power Sales Agreements* with its member systems and other utilities. MMWEC's responsibility has been to plan and acquire a mix of generating projects that will reflect the special needs of its member cities and towns at the lowest possible cost to the consumer.

Who we are...

MMWEC's *members* were established as municipal electric light departments between 1889 and 1914. They are among the oldest public electric utilities in the nation. Each of the 32 *municipally-owned utilities* was created by a vote of its respective community and is now governed by Chapter 164 of

*Words in italics are defined in a glossary at the end of this publication.



1. Ashburnham Municipal Light Plant
2. Belmont Municipal Light Department
3. Boylston Municipal Lighting Plant
4. Braintree Electric Light Department
5. Chicopee Municipal Lighting Plant
6. Danvers Electric Department
7. Georgetown Municipal Light Department
8. Groton Electric Light Department
9. Hingham Municipal Lighting Plant
10. Holden Municipal Light Department
11. Holyoke Gas & Electric Department
12. Hudson Light & Power Department
13. Hull Municipal Lighting Plant
14. Ipswich Municipal Light Department
15. Littleton Electric Light & Water Department
16. Mansfield Municipal Electric Department
17. Marblehead Municipal Light Department
18. Merrimac Municipal Light Department
19. Middleborough Gas & Electric Department
20. Middleton Municipal Light Department
21. North Attleborough Electric Department
22. Paxton Municipal Light Department
23. Peabody Municipal Light Plant
24. Princeton Municipal Light Department
25. Reading Municipal Light Department
26. Shrewsbury Electric Light Plant
27. South Hadley Electric Light Department
28. Sterling Municipal Electric Light Department
29. Templeton Municipal Lighting Plant
30. Wakefield Municipal Light Department
31. West Boylston Municipal Lighting Plant
32. Westfield Gas & Electric Light Department

the Massachusetts General Laws (MGL). Each joined MMWEC only after the enabling legislation, MGL Chapter 164A and Chapter 775 of the Acts of 1975, was accepted by a majority vote of residents at a Town Meeting or councillors at a City Council meeting. Any other Massachusetts city or town with a municipal electric light department may become a member of MMWEC in the same manner.

Municipally-owned utilities, unlike *investor-owned utilities* (IOUs), are entirely owned by the communities they serve (investor-owned utilities are owned by their stock-holders). The local communities exercise substantial control over their municipal utilities, whereas the substantial regulatory control of the IOUs is in the hands of the state Department of Public Utilities (DPU) and the Federal Energy Regulatory Commission (FERC).

Municipal utilities generally have lower rates than their investor-owned counterparts because they pay no dividends and are therefore able to build up equity in their system's facilities, and because they can borrow money at lower interest rates through the sale of tax-exempt bonds. Unlike the IOUs, which must pay local property taxes as well as state and federal income taxes, municipal electric departments pay no income taxes, although they generally make payments in lieu of property taxes to their city or town.

The manager of each electric department works under the direction of a municipal light board or similar body typically made up of three or five members who are elected or appointed, generally for staggered three-year terms.

Each participating municipal department operates a local distribution system delivering electric power to customers within its municipality and, occasionally, to adjoining communities. Some also own generating facilities. In fact, MMWEC's 32 member systems serve 230,000 customers in 38 of the 351 communities in Massachusetts. In addition to the communities listed on page 2, the towns of Stow (served by Hudson), Boxborough (served by Littleton), Lakeville (served by Middleborough), Lynnfield (served partially by Peabody and partially by Reading) and North Reading and Wilmington (both served by Reading) share the benefits of the MMWEC program.

The Pascoag, R.I. Fire District is the only out-of-state municipal system to sign a *service agreement* with MMWEC. Because it is not in Massachusetts, it cannot be an MMWEC member, but it can purchase bulk power and take advantage of some MMWEC services. Pascoag, R.I. is also a participant in certain MMWEC power supply projects.

The energy requirements for 37 of the 38 towns and cities served by MMWEC in 1979 (Belmont joined MMWEC in 1980) totaled three and one

half billion *kilowatthours*. The projected peak *demand* of the 32 systems is expected to reach over 970 *megawatts* (MW) in the early 1990s.

MMWEC is governed by a nine-member Board of Directors. Seven of the members are managers (or commissioners) of municipal light departments who are elected to the board by the member systems and two are appointed by the governor. Of the elected directors, three are elected by the member systems, each of which has one equal vote. The remaining four are also elected by the member systems, but with the votes being weighted according to each system's annual kilowatthour sales. Each of the elected directors serves for a one-year term. The appointed directors serve at the discretion of the governor. The chief executive officer of MMWEC is the general manager.

What we do...

The MMWEC power supply program is designed to reduce power supply costs to the MMWEC members while assuring them a dependable source of bulk power. Among the services MMWEC provides as a way of reaching this goal are the forecasting of members' future power needs, administering exchanges of power among members and developing a program to shift the members' power supply from primarily *wholesale* power purchases under various rate schedules to long-term power supply resources, priced at actual cost.

To accomplish this last goal, MMWEC makes power supply recommendations to its members based on an analysis of their current and projected electric power requirements and on sources of power existing and planned within the New England Power Pool (*NEPOOL*). Based on these recommendations and with the consent of the departments, MMWEC:

- arranges economical short-term *power purchase contracts* with other utilities;
- negotiates long-term contracts and *joint-ownership* in fossil fuel and nuclear *power plants* being built by other utilities;
- constructs its own generating units such as its Stony Brook Intermediate and Peaking Units in Ludlow, Mass.;
- studies long-range power alternatives (especially those which displace oil), such as several small-scale hydroelectric power facilities in Massachusetts, Connecticut and New Hampshire; and
- arranges interim sources of bulk, *baseload* power for the member participants until the power plants in which MMWEC has joint-ownership become operational.

In order to meet the energy needs of its members, MMWEC has entered into power sales agreements with its members and other organizations, including investor-owned utilities. MMWEC has secured ownership in 474 megawatts* (MW) of nuclear baseload capacity (four units) and 612 MW* of fossil fuel capacity (four units). Most of the units are scheduled to become operational between 1981 and 1992. The W.F. Wyman Unit No. 4 began operating in 1978.

Nuclear plants in which MMWEC owns interest

- 152 MW of Pilgrim Unit No. 2 (*Boston Edison*)
- 52 MW of Millstone Unit No. 3 (*Northeast Utilities*)
- 267 MW* of Seabrook Units Nos. 1 and 2 (*Public Service Co. of N.H.*)

Fossil Fuel Plants in which MMWEC owns interest

- 79 MW of Sears Island Coal Project (*Central Maine Power*)
- 170 MW of Stony Brook Peaking Project (*MMWEC*)
- 341 MW* of Stony Brook Intermediate Project (*MMWEC*)
- 22 MW of W.F. Wyman Unit No. 4 (*Central Maine Power*)

**Includes power sales agreements and joint-ownership shares to non-members*

MMWEC is able to hold down the cost of acquiring or building new generating capacity by using lower-cost, tax-exempt financing. (See MMWEC's Financing Program.)

Currently, most MMWEC members obtain all or part of their electricity through wholesale power purchases from investor-owned utilities. Braintree, Hudson and Holyoke have their own generating facilities which can satisfy most of their power requirements. Ipswich, Chicopee, Marblehead, Peabody and Shrewsbury also meet some of their requirements with their own generating units.

By the early 1990s, nearly all of the power needs of these members will be met with power delivered to them at cost from generating units owned in whole or in part by MMWEC or by the municipal systems directly, although some requirements will continue to be supplied by long-term power supply contracts negotiated by members prior to 1975. Because much of the power furnished through the power supply program will be from nuclear units, MMWEC members will see their dependence on costly oil-fired generation decline.

In 1977, MMWEC gained full utility status by joining NEPOOL, enabling MMWEC to represent its members' interests in regional planning and

operations. As an operating utility, MMWEC has saved its members substantial sums of money through exchanges of short-term *entitlements* in power resources.

The Stony Brook Project...

Stony Brook, the cornerstone of MMWEC's power supply program, is the first major generating project to be built in New England as a joint venture of consumer-owned and operated electric departments.

It is an integral part of an overall program that will eventually supply more than one million *kilowatts* of electric power to participating electric departments by 1990 and by which members can, for the first time, control their own bulk power supplies at the lowest possible cost. The oil-fired Stony Brook plant, when completed, will generate 511 MW of both *intermediate* and *peaking* power. Exhaust heat from the intermediate unit's combustion turbines will be used to generate additional electricity via a steam driven turbine which employs the *combined cycle* process.

Stony Brook, as designed, is capable of burning natural gas and synthetic fuels as well as oil. In addition, the MMWEC Board of Directors has approved a notice of intent with the Bay State Gas Co. which may result in the burning of natural gas in one of Stony Brook's three intermediate combustion turbines.

Renewable resource program...

Under MMWEC's Renewable Resource Program, begun in September 1979, several potential hydroelectric sites and a refuse-to-energy project are being evaluated. Possible locations for windmills may be researched in the future.

Preliminary studies by MMWEC have determined that hydroelectric facilities may be feasible at several sites in New England.

MMWEC participated in some early attempts to plan a facility that would generate electricity from refuse and has continued to gather information, evaluate the emerging waste recovery technology and participate in active discussions with potential developers of resource recovery facilities.

MMWEC has considered the implementation of a program to study and identify primary sites for windmills. The program, which has been postponed, would install wind speed recorders at selected sites and could lead to the actual construction of wind energy facilities on sites where they would be feasible.

MMWEC's Financing Program...

MMWEC, as a political subdivision of the Commonwealth of Massachusetts, issues tax-exempt electric *revenue bonds* to finance the purchase of ownership interest in New England's major new electric generating facilities. Through 1980, MMWEC had issued \$673 million in revenue bonds and notes to provide capital for the purchase of generating resources totaling more than 1,000 MW of capacity at an estimated financed cost in excess of \$1.5 billion.

Some planned generating units have been cancelled. For example, in December 1979, the New England Power Company cancelled NEP Units Nos. 1 and 2, following rejection by the General Services Administration of the use of the proposed Charlestown, R.I. site. MMWEC's approximate share in these nuclear units was 138 MW. In late December 1980, Northeast Utilities cancelled Montague Units Nos. 1 and 2. MMWEC's share in those units was 33 MW.

Although MMWEC enjoys a tax exempt status for its bonds, it is required to make payments in lieu of property taxes to Massachusetts communities which host its facilities.

To date MMWEC has issued six power supply system electric revenue bonds: the \$75 million 1976 Series A bond, issued at a net interest cost of 7.234 percent; the 1977 Series A bond in the amount of \$177.37 million, issued at a net interest cost of 6.359 percent; the \$83.5 million 1977 Series B bond, issued at a net interest cost of 6.127 percent; the 1978 Series A bond in the amount of \$75 million, issued at a net interest cost of 6.824 percent; the 1979 Series A bond, issued for the amount of \$150 million, at a net interest cost of 7.006 percent; and the \$112 million 1980 Series A bond, issued at a net interest cost of 10.25 percent; for an average net interest cost of 7.3 percent.

MMWEC's bonds are secured by Power Sales Agreements of a "*take or pay*" nature which require the participating electric systems to make payments on *debt service* whether or not the project is ever completed, operated, suspended or interrupted.

Revenues derived from the Power Sales Agreements are used to pay the *interest* and *principal* to the *bondholders*. Under the Power Sales Agreements, payments are generally not scheduled to begin until sometime after the unit or units are expected to be in operation. The ultimate sources of these revenues are the fees paid for electric service by customers in the geographic areas which comprise the service territories of the utilities participating in the project.

MMWEC, as a public corporation, spends its funds in the interest of its members. Basically, there are two kinds of expenditures:

- operating expenses, which are the day-to-day outlays for salaries, maintenance, minor construction, fuel and debt service — the required payment for interest and retirement of the principal amount of a debt;
- capital expenditures, which are outlays for substantial improvements and additions useful over a long period of time. These are usually too hefty to include under the current budget and are, therefore, paid with borrowed money (bonds or notes). Construction of a generating facility would normally be included in this category.

Since MMWEC's bond issues are too large for most single investors, an *underwriter* serves as an intermediary between MMWEC and the investment community. In fact, MMWEC's issues are sufficiently large that a team of underwriters, known as an *underwriting syndicate*, is employed. One member of the syndicate is designated to act as the *lead underwriter* for the team.

Bond sales can be either negotiated or competitive. In competitive sales, underwriters or syndicates submit *bids* on the bond issue. The underwriting is awarded to the underwriters or syndicate that submits the best bid, based on certain stipulated criteria. If the issue is negotiated, as all of MMWEC's issues have been to date, one underwriter or syndicate is given the exclusive right, by written contract, to underwrite the issue. The purchase price in such a sale is subject to negotiation between the issuer and the underwriter.

At the time of the underwriting, the team pays MMWEC an agreed price and then resells the bonds to investors for a higher price. The difference between the purchase price and the resale price is the underwriting team's *spread*. The underwriting team commits itself to purchase an entire issue even if enough investors have not been found to buy all the bonds by the time the deal is consummated.

MMWEC retains a *bond counsel* who provides legal services directly related to the sale of MMWEC's bonds. The MMWEC staff, bond counsel, MMWEC's *consulting engineer*, *financial advisor* and underwriters, cooperate in evaluating MMWEC's long-term *capital improvement plans*, designing the bond issue, tailoring the issuance of the bonds and preparing the *official statement* for each bond issue.

Because investors and underwriters use the information contained in the official statement as a basis for their decisions on MMWEC's bond issues,

extreme care is taken in the preparation of this document, which is revised for each issue.

The official statement:

- explains, through various facts and figures, all information pertinent to investors and the ability of the bond issuer to repay the bonds. Because this is the information upon which an investor will base his decision of whether to buy the bonds, the official statement must be very accurate.

In the case of MMWEC, this statement contains a comprehensive description of the company including its organization and management, its outstanding debts, bond repayment record, future borrowing plans, its power supply program, future sources of power for its members and its power purchase arrangements. The statement also describes the management, electric system operations and economic condition of the member and non-member participants and includes an overview of the present economic and regulatory climate.

- contains a detailed description of the bond issue. For example, the details of the facility which will be financed with the money borrowed through the bond sale may be described. The statement also details, among other things, the amount of the issue, maturity structure and the interest payment dates. Also included is a summary of the bond resolution.

A bond rating is a shorthand description of an issuer's credit worthiness and is determined by bond-rating agencies. This single determination has the largest influence on the price at which the bond issue will be underwritten and subsequently reoffered compared to similar entities' bonds. For a fee, several New York City firms provide ratings based on the complexity of the bond issue and the time expended in the actual rating process. MMWEC has its bonds rated in an effort to increase their *marketability*. Bonds are rated in one of several investment grades and subgrades. Usually, higher bond ratings mean less risk to the potential investors and, therefore, lower interest costs to the issuer.

Where MMWEC is going...

MMWEC will continue to assist its members in meeting their demand for electric power as reliably and economically as possible. During the 1980s and 1990s, the foundation of the MMWEC Power Supply Program will be completed as the nuclear and coal-fired baseload power plants in which

members are joint owners and the Stony Brook Intermediate and Peaking Units begin operating. Because these are joint ownership arrangements and not wholesale contracts, the members will be exercising more control than ever before over their power sources.

But MMWEC's commitment to its members will not stop when these units are on-line. Staff must constantly refine members' power programs to meet changing circumstances. MMWEC will continue to study renewable resources to gauge their potential as part of those power mixes. MMWEC will also continue to seek economical sources of power outside of New England and will study the use of such synthetic fuels as coal gas in the Stony Brook units.

MMWEC staff will plan for such contingencies as delays in the completion of jointly-owned projects. MMWEC will continue to improve upon methods used to forecast its members' future loads to better determine what resources will be required. In conjunction with these advanced load forecasting techniques, more detailed technical assessments and recommendations for future sources of power will be provided.

New England must lessen its dependence on costly imported oil. MMWEC members will help with a power supply mix derived primarily from nuclear, coal, natural gas and renewable resources.

Through these methods, MMWEC will accomplish its major goal: helping members attain self-reliance and independence.

Organizations

APPA: *American Public Power Association* – A national service organization composed of more than 1,400 local publicly-owned electric utilities in 48 states, Puerto Rico, Guam, the Virgin Islands and American Samoa. Among its members are municipalities, state power authorities and publicly-owned districts.

CONVE: *Connecticut Valley Electric Exchange* – One of the four satellites of NEPEX. Located in Southington, Ct., CONVE serves Connecticut and Western Mass.

DEQE: *Massachusetts Department of Environmental Quality Engineering*

DOE: *United States Department of Energy*

DPU: *Massachusetts Department of Public Utilities* – The utility regulatory arm of the state which, among its other responsibilities, approves borrowing for investor-owned utilities and MMWEC.

EEL: *Edison Electric Institute* – The national service organization of investor-owned utilities.

EFSC: *Massachusetts Energy Facilities Siting Council* – The agency which oversees siting of new facilities in the state and the state's need for electric power. MMWEC supplies EFSC with long-range forecasts of its members' power needs and the methods of supply each year.

EOER: *Massachusetts Executive Office of Energy Resources*

EPA: *United States Environmental Protection Agency*

FERC: *Federal Energy Regulatory Commission* – The successor to the Federal Power Commission, this agency oversees the equitable processing of contracts between electric and gas utilities. FERC is also in charge of granting the licenses and permits necessary for the development of hydroelectric projects.

MEAM: *Municipal Electric Association of Massachusetts*

NEPEX: *New England Power Exchange* – Located in West Springfield, Mass., this is NEPOOL's central control center. It schedules the hourly output of the generating units in New England in the most economical and reliable manner and is responsible for billing NEPOOL members for the electricity they use each month. NEPEX has four satellites at strategic locations in New England, including REMVEC and CONVE.

NEPLAN: *New England Power Planning* – This subdivision of NEPOOL carries out studies for the New England electric utilities to aid in forecasting and to determine the best way to supply the future needs of New England's electric consumers.

NEPOOL: *New England Power Pool* – An association of New England electric utilities which have joined together to serve electric customers in New England as efficiently and reliably as possible.

NEPPA: *Northeast Public Power Association* – An organization which represents and serves the consumer-owned utilities of New England.

NERCOM: *New England Regional Commission* – An organization of the Federal Government and New England states formed to analyze and solve regional problems.

NRC: *United States Nuclear Regulatory Commission* – The federal agency which reviews the design, construction and operation of nuclear power plants in the United States.

REMVEC: *Rhode Island, Eastern Massachusetts, Vermont Energy Control* – Located in Westborough, Mass., REMVEC is the largest satellite of NEPEX. It assists the main center and can function independently in times of emergency.

Glossary

Actual Dispatch – The power being distributed across New England at any given moment. The NEPEX dispatcher monitors the New England load and operates inter-ties or turns on or off generating plants to meet that load economically. The dispatcher strives for the most efficient and economical combination of power sources while maintaining reliability. (See *NEPEX* under Organizations. See also *Dispatching*.)

Appliance Saturation – The quantity of a certain type of appliance, for example the number of electric ranges or refrigerators, connected to the power lines and in use in a system, divided by the number of residential customers in that system.

Baseload – The constant, minimum electric needs of a system. A baseload power plant usually must operate continuously; therefore, those units supplying the cheapest energy, such as nuclear power plants and certain hydroelectric plants, are used to meet baseload demands. (See also *Intermediate* and *Peaking*.)

Bidder (Bid) – An underwriter or underwriting syndicate which makes a proposal to purchase a bond issue for a specified price either in a competitive or a negotiated bond sale. In a competitive sale, the bids are sealed

and the issue is sold to the underwriter or syndicate which submits the best bid, based on stipulated criteria. In a negotiated sale, one underwriter or syndicate is given the exclusive right by the issuer to underwrite the bond sale.

Bond – A legal paper issued to finance the construction of new facilities. The bond accrues interest for the bond buyer and is a certificate of the indebtedness of the issuer to the buyer. (See also *Revenue Bond*, *Tax-Exempt Bond*.)

Bond Buyer – An individual or corporation which buys a bond.

Bond Issuer – An entity which borrows money from investors through the sale of bonds.

Bond Counsel – An attorney or firm of attorneys retained by the issuer to assure the buyer that the bond was legally issued. The counsel's opinion, printed on each bond, states that the issuer has met all legal requirements in issuing the bond and that the interest paid on municipal bonds is tax-exempt. The bonds are not marketable without such an opinion. (See *Legal Opinion*.)

Bond Fund Trustee – A bank designated by the issuer as

the custodian of funds and the official representative of the bondholders. Among their many functions, the trustees handle the money flow in paying interest and redeeming bonds.

Bond Rating – Rating systems that provide the investor with a simple measure, usually in the form of letter or number codes, with which to judge the relative investment qualities of various bonds. Moody's Investor Service and Standard and Poor's Corporation are the principal bond rating agencies.

Capacity – Each system's ability to meet its load, either through its own power generation or contracts for the purchase of power. NEPOOL requires each system to have capacity in reserve above that amount needed to meet its loads. Capacity, usually measured in kilowatts or megawatts, is also the term used to describe the load for which a generating unit, such as a turbine generator in a hydroelectric plant, a generating station, such as the Stony Brook Project, or another electrical apparatus, such as a transformer, is rated by the user or the manufacturer. This is generally referred to as the installed or name-plate capacity (so-called because it is inscribed on the name plate of a turbine or other apparatus by the manufacturer and refers to the guaranteed continuous output of the device under specified conditions).

Capability – The maximum load a generating unit, generating station or other electrical apparatus can carry under specified conditions for a given period of time before it exceeds its approved limits of temperature and stress. (Sometimes incorrectly used interchangeably with *capacity*.)

Capital Expenditures – The costs of constructing new utility plants (including additions, betterments and replacements) and the cost of purchasing or acquiring existing plants.

Capital Improvement Plan – A plan listing capital expenditures that will be incurred each year for a certain period of time to meet anticipated needs. The full resources expected to be available to finance each expenditure are also listed.

Circuit – An electrical conductor or system of conductors through which electricity flows.

Cogeneration – The simultaneous production of electricity (or mechanical work) and useful heat in a way that requires less fuel than producing electricity and heat separately. This is an old idea (as much as 58 percent of electric power generated at the turn of the century was produced with cogeneration) that is becoming popular again as the cost of fossil fuels rise.

Combined Cycle – The exhaust from a combustion turbine, a jet-engine-like electric generator, can be as hot as 1000° F. The energy in this exhaust can be used to generate additional electricity through a process known as combined cycle. In this process, the waste heat is passed over tubes filled with water inside a steam generator. The water boils into steam which is used to drive a steam turbine which in turn spins a generator and produces additional electricity. With this technique, a combustion turbine's output can be boosted 30 to 40 percent without any additional fuel requirement.

Common Costs – Costs incurred jointly by two or more types of operations and subsequently allocated to each operation.

Competitive Bond Sale – See *Bidder*.

Consulting Engineer – A person or corporation which offers a broad range of services to issuers seeking debt financing. These include the preparation of capital improvement plans and feasibility reports.

Contract Demand – See *Power Contracts*.

Coupon – The part of a bond which shows the amount of interest due the buyer and the date it is due. Coupons are detached from the bond, usually semi-annually and may be presented to the issuer's designated paying agent for payment of interest or deposited in a bank for collection. (See *Bond*.)

Customer – An individual, firm, organization or utility which receives electricity at a certain location. If a firm, for example, receives electrical service at two locations, each is generally considered an individual customer.

Debt Service – The term used to describe the bond repayment schedule or "pay back" (usually annual debt service). This includes the principal amortization and interest paid to the bond buyer. (See *Bond Buyer, Interest, Principal*.)

Debt Service Coverage – This is a term usually connected with revenue bonds. It indicates the margin of safety for the payment of debt service. It reflects the number of times, or the percentage, by which net earnings available for debt service (earnings minus expenses) over a period of time exceed the debt service payable during that period. (See *Revenue Bonds*.)

Demand – See *Load, Demand*.

Discount – The amount by which the face (par) value of a bond, the value the bond will have at maturity, exceeds the price for which the bond is acquired or sold. (See *Premium, Principal*.)

Dispatching – The central, overall control of a large electrical power system. Through this control, generating stations are switched on or off and cycled up and down to meet the load of any moment; high-voltage lines, substations and other transmission equipment are operated and maintained; principal tie-lines and switches are controlled; and transactions with neighboring utilities are managed. (See *NEPEX* under *Organizations*.)

Electric Generation – The process of transforming one form of energy, such as chemical, nuclear or kinetic (falling water, wind) into electrical energy. The term also refers to the amount of electric energy, expressed in kilowatt-hours, produced in this transformation process. (See *Power Plant*.)

Energy – The capacity for doing work. The energy in fuels or in falling water, for example, can be harnessed to turn a turbine or a waterwheel which drives a generator which produces electricity. The electricity, another form of energy, can be made to do work in light bulbs, electric motors, heaters and other electrically powered equipment.

Entitlement – A share of the electrical output of a generating station or a contractual obligation to deliver a specified amount of electricity to a buyer. These can be either short or long-term contracts.

Facility – The electric power equipment and buildings owned by a utility.

Financial Advisor – A consultant who helps an issuer decide when to issue bonds, the magnitude of the bonds, the best place to sell them and the length of time to issue them. The financial advisor also helps prepare certain financial documents, and assists in

the procurement of bond ratings and marketing evaluations.

Firm Power – See *Power Contracts*.

Fossil Fuel – See *Power Plant*.

Grid – A system of power generators and high-voltage transmission lines interconnected with bulk power supply agencies. With a grid, power can be quickly shunted from areas where it is in surplus to areas where there is a shortage, thus preventing blackouts. (See *Dispatching*, *Power Pool*.)

Hydroelectric Power – See *Power Plant*.

Interest – Compensation paid or to be paid by the issuer for money borrowed. This includes interest paid at periodic intervals or as an initial discount at the time the transaction is made. (See *Bond*, *Principal*.)

Intermediate – The type of load created when consumers are using a moderate amount of electricity. Intermediate power generators can be frequently cycled up or down and turned on in increasing order of cost to meet the load. (See also *Baseload*, *Peaking*.)

Interruptible Power – See *Power Contracts*.

Investment – Conversion of cash to a security, such as treasury bills, certificates of deposit, bonds or other financial paper.

Investor-Owned Utility (IOU) – An electric utility company which has shareholders and is owned and operated for profit. (See *Municipally-Owned Utility*.)

Joint Action Agency – A consortium of consumer-owned electric systems established to jointly own and finance generating and transmission capacity. (See *Joint Ownership*.)

Joint Ownership – A means by which several electric utilities jointly finance and own large generating plants and realize economic benefits of size not otherwise possible.

Kilowatt (kW) – 1000 watts. (See *Watt*.)

Kilowatthour (kWh) – A unit of electric energy equal to one kilowatt of power supplied or taken from a circuit steadily for one hour.

Lead Underwriter – The senior firm in an underwriting team. This firm is usually responsible for most of the planning and administrative functions during the preparation of an issue for sale. The lead underwriter deals directly with all the parties involved in an issue – the issuer, counsel, consultants and underwriting syndicate. The firm oversees the preparation of legal documents, formulates marketing strategy and handles the mechanical details of an issuance. In addition, the lead underwriter is in charge, administratively, of marketing, allocation, payment and delivery of a syndicate offering. The senior firm is usually compensated with a larger share of the management fee and a larger share of the bonds for resale. (See *Underwriter*.)

Legal Opinion – An opinion concerning the legality of a bond issue, usually written by a law firm specializing in the appraisal of public borrowings, and which would include statements as to tax exemption if so intended. (See *Bond Counsel*.)

Load, Demand – Technically, load is the amount of electric power delivered or required by any plant or points in a system, while demand is the rate at which that electricity is delivered or consumed for a short, specified time period. In simple terms, both are measures of electric usage or electric generation. The

primary source of both load and demand, which are expressed in kilowatts, not kilowatthours, is the power consuming equipment of the consumer. Load and demand vary from hour to hour, day to day and season to season.

Load Management Program – A program instituted by a utility, electric system or customer to control the time and length of the use of electricity, thereby reducing the peak demand or total energy consumption of the utility. (See *Load*, *Demand*.)

Marketability – The ease with which a bond can be resold.

Megawatt (MW) – 1000 kilowatts or one million watts. (See *Watt*.)

Megawatthour (MWh) – 1000 kilowatthours.

Member – Any Massachusetts city or town with a municipal electric department in which the majority of voters at a Town Meeting or the majority of councillors at a City Council meeting have agreed to accept Chapters 164A and 775 of the Massachusetts General Laws, in which the governing officials have agreed to comply with the terms and conditions of the MMWEC by-laws and which has applied for membership to the MMWEC Board of Directors and been accepted.

Municipally-Owned Utility – An electric utility owned by a city or town. Such a utility has no stockholders and is a public service enterprise which is not organized and operated for profit. (See *Investor-Owned Utility*.)

Negotiated Bond Sale – See *Bidder*.

Net Interest Cost – This is the issuer's average annual cost of the debt, including interest and any discount or premium, expressed as a percentage of the average outstanding principal. It is generally the basis for choosing an underwriter in a competitive sale.

Non-Firm Power – See *Power Contracts*.

Nuclear Power – See *Power Plant*.

Official Statement – A document which explains the bond issue, the financial, economic and social characteristics of the issuer and the use to which funds raised with the bond issue will be put. Potential bidders and investors use this information to evaluate the credit quality of the bonds and to determine the interest rates at which they should be purchased. The statement lowers the cost to bidders and investors of acquiring credit information. (See *Bidders*.)

On-Peak, Off-Peak – Relatively high (on-peak) or low (off-peak) periods of electricity usage.

Own Load Dispatch – A billing procedure used by NEPEX to establish in what economic order a utility's units would have had to be turned on to meet the prevailing demand if the utility were depending solely on its own resources. The method is an after-the-fact interpretation of what a given system needed to meet its own load. (See *NEPEX* under *Organizations*.)

Peak, Peaking – The highest demand on a system. Peaking generators are the most expensive to run and are generally shut down as soon as the demand drops to intermediate levels. (See also *Baseload*, *Intermediate*.)

Power – See *Energy*.

Power Contracts – Agreements between utilities or between a utility and a public authority, such as a municipality, for the sale of wholesale power of a certain magnitude over a period of time. There are several types:

Firm Power – Also called contract demand, this is electric power of a certain magnitude that is available at all times during the contract period even under adverse conditions.

Interruptible Power – Electric power of a certain magnitude made available by an agreement which permits the supplier to terminate or reduce the supply under stipulated operating conditions.

Non-Firm Power – Electric power supplied under a contract that does not guarantee continuous availability, as does a firm power contract.

Unit Related Power – A contract that entitles the purchaser to a specific portion of a specific electric generating unit or to a specific amount of electric power if and when a specific unit or units are or can be operating.

Wholesale (Sale for Resale) – Electric power supplied to other utilities or public authorities, such as municipalities, under firm-power contracts for resale or distribution to the buyers' customers.

Power Plant – A power plant is an electric generating station which uses prime movers, such as turbines or water wheels, auxiliary equipment, such as pumps or fans and electrical generators to convert one form of energy into electrical energy. Types of power plants include:

Fossil Fuel – These use conventional fuels, such as coal, oil and natural gas. They are in a class known as thermal plants, because their fuel is burned to make heat which produces steam which is used to drive turbines which in turn drive electric generators.

Hydroelectric – A plant in which the energy of falling water is harnessed to turn a turbine-generator. The amount of energy a hydroelectric plant can produce is determined, in part, by its head and, in part, by the volume of water available. Head is the usable depth of the water in the reservoir that is above the level of water in the lower pool. Higher heads produce more water pressure with which to turn the turbine generator.

Nuclear Power – The energy produced by the splitting of uranium atoms is used to heat water and make the steam in these plants which, in turn, spins the turbine-generators. This is also a thermal plant.

Pumped Storage – These are hydroelectric plants which use electric energy generated at times of low customer demand to pump water into a high reservoir. Then, during peak demand periods, the water is allowed to flow downhill through turbine-generators to the lower reservoir to produce electricity.

Resource Recovery – A process which removes the recyclable materials from municipal waste and uses the remainder as fuel. Except for its fuel, this type of plant is similar in operation to a fossil fuel plant.

Windmill – A wind-driven turbine-generator.

Wood Plants – Wood or wood chips can be burned in boilers to make steam. Wood plants are sometimes fueled with the residue from sawmills and are similar in operation to a fossil fuel plant.

Power Pool – Two or more interconnected electric systems which operate in concert to meet their combined requirements in the most reliable and economic manner. (See *Dispatching, Grid*.)

Power Sales Agreement – A written agreement between MMWEC and a project participant for the sale of energy

from, or capacity of, a specific project. (See *Project Participant*.)

Preference Rights – Under the MMWEC By-Laws, MMWEC's members must be offered the right to buy all of the electric capacity from any power plant MMWEC builds, any joint ownership share in another utility's generating plant that MMWEC purchases or any entitlement to power from a generating plant that MMWEC negotiates. This is known as the members' preference rights.

The way in which the power is divided among the members is determined according to a formula drawn up by the Board of Directors. MMWEC's responsibility is to grant members this right of first refusal. If any members choose to waive this right or to take only a portion of their preference allocation, MMWEC can sell the unclaimed power to others. (See *Member, Joint Ownership, Entitlement*.)

Premium – When the price of which a bond is acquired or sold exceeds the face (par) value of the bond, the value it will have at maturity, the bond is said to have been sold or acquired at a premium. (See *Discount, Principal*.)

Principal – The face (par) value of a bond, exclusive of any interest accrued. (See *Bond, Interest*.)

Project Participant – An MMWEC member, another consumer-owned utility or a private utility which elects to take part in a given MMWEC project and signs a power sales agreement. (See *Power Sales Agreement*.)

Pumped Storage – See *Power Plant*.

Resource Recovery – See *Power Plant*.

Revenue Bond – Bonds secured and payable from the revenue derived from the sale of a commodity, such as the electricity produced by the facility financed with the bonds. (See *Bonds*.)

Service Agreement – A written contract between MMWEC and a consumer-owned utility which defines the obligations of the contractees with respect to the planning for, the purchase of, the sale of or the exchange of energy resources and other bulk power supply services.

Service Area – The region which includes a utility's customers.

Service Participant – An MMWEC member or another consumer-owned utility, from either Massachusetts or another state, which executes the MMWEC Service Agreement. (See *Service Agreement*.)

Short-Term Debt – Debts payable on demand or which, by their terms, are payable within a few years of their issuance.

Spread – The difference between the purchase price and the resale price of a bond issue. This is the underwriter's margin to cover his costs and profit.

Substation – An assemblage of equipment designed to switch, transform or regulate the voltage of electricity. Some substations step-down or lower the voltage of electricity while others step-up or increase the voltage. A switching station, which ties two or more circuits together, is another type of substation.

Summer and Winter Peaks – The greatest load on an electric system during a specified interval in the summer cooling period (usually between June 1 and Sept. 30) or the winter heating period (usually between Dec. 1 of one year and March 31 of the next year.) (See *Load, Demand*.)

System – Each of MMWEC's 32 consumer-owned and

operated electric departments is a system.

Take or Pay – An unconditional agreement of a purchaser to take a fixed percentage of the capacity of a project and pay a fixed percentage of the cost (including debt service), whether or not the project is completed or operating. The purchaser will generally begin payment on a specified date, usually after the anticipated completion date of the project. This is in contrast to take *and* pay contracts where payment is only made for power actually taken. Take *or* pay contracts are required for projects financed by MMWEC electric revenue bonds. (See *Power Sales Agreement*.)

Tax-Exempt Bond – The buyer of a tax-exempt bond does not pay federal income tax on the interest earned on such a bond and often does not pay state income tax if he resides in the state where the bonds are issued. Tax-exempt bonds can only be issued by government entities and agencies or subdivisions of such entities.

Transmission – The process of transporting electric energy in bulk from where it is generated to other principal parts of the distribution system or to other utilities. The term also describes that portion of a utility's facilities used to transmit electric energy.

Underwriter – The investment banking firm that purchases a bond offering from an issuer. MMWEC's bonds

are generally purchased by a team or syndicate of underwriters, one of which is designated to act as the lead underwriter. (See *Lead Underwriter*.)

Underwriting Syndicate – Several underwriters who collectively purchase a single bond issue. (See *Lead Underwriter*, *Underwriter*.)

Unit Related Power – See *Power Contracts*.

Waiver – A document which a service participant or member signs to indicate it does not wish to participate in a particular project or service, or wishes to waive its preference rights to the purchase of electric capacity and energy derived from the specific project or service. (See *Member*, *Service Participant*.)

Watt – This is the U.S. standard unit of electric power. It is equal to a current of one ampere under a pressure of one volt or about 1/746 of a horsepower.

Wheeling – When one utility uses the power lines of another utility to transmit power it owns to its customers.

Wholesale – See *Power Contracts*.

Windmill – See *Power Plant*.

Wood Plant – See *Power Plant*.

Yield – The net annual percentage of income from an investment. The yield of a bond reflects interest rate, length of time to maturity and the write-off of any premium or discount granted at the time of purchase.

